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**Heubel et al.**(10) **Pub. No.: US 2010/0177050 A1**(43) **Pub. Date: Jul. 15, 2010**(54) **METHOD AND APPARATUS FOR  
GENERATING HAPTIC FEEDBACK FROM  
PLASMA ACTUATION****Publication Classification**(51) **Int. Cl.**  
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**G09G 3/28** (2006.01)(52) **U.S. Cl. .... 345/173; 345/60**(57) **ABSTRACT**(75) **Inventors:** **Robert W. Heubel**, San Leandro,  
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A method and device for generating haptic feedback over a touch surface using plasma actuation are disclosed. A haptic device includes a touch surface, plasma, and a substrate. In one embodiment, the touch surface, which can be made of flexible and/or deformable materials, is capable of sensing one or more events. The substrate is situated adjacent to the touch surface with a separation gap, which physically separates the substrate from the touch surface. The substrate provides haptic feedback in response to the event(s). The plasma is capable of accumulating at one or more pockets located in the separation gap, and configured to facilitate the haptic feedback via energy transfer.

